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### [Claim(s)]

[Claim 1] A pressure sensitive adhesive sheet for multilayer gel-structure living bodies characterized by adhesive layer concerned and a base layer being laminated by thickness direction including an adhesive layer and a base layer which consist of a gel object of synthetic macromolecule which has network structure including water at least as a solvent, and which differ in gel composition mutually.

[Claim 2] In a case where an adhesion degree of an adhesive layer and a base layer is measured with the inclination type ball tackiness device (20 angles of inclination) of a description to JIS Z 0237-1991 "adhesive tape and pressure sensitive adhesive sheet test method", The pressure sensitive adhesive sheet for multilayer gel-structure living bodies according to claim 1 a difference of a ball number of said both layers is one or more, and ranges of whose ball number of an adhesive layer are 2-50.

[Claim 3] The pressure sensitive adhesive sheet for multilayer gel-structure living bodies according to claim 1 or 2 transparent [ an aspect ] or translucent.

[Claim 4] Synthetic macromolecule which has the network structure which constitutes said gel object is (a). A copolymer of one sort or two sorts or more of polymerization nature unsaturated monomers, and a bridge formation nature unsaturated monomer, Or hydrophilic synthetic macromolecule produced by polymerizing one sort or two sorts or more of polymerization nature unsaturated monomers which have at least one sort of functional groups chosen from a group which becomes the (b) side chain from a hydroxyl group, a carboxyl group, an amide group, and an amino group, The pressure sensitive adhesive sheet for multilayer gel-structure living bodies according to any one of claims 1 to 3 which is a structure-of-cross-linkage object acquired by reacting at least one sort of bridge formation sex factors chosen from a group which consists of a polyvalent metal ionic compound, polyvalent carboxylic acid, a polyhydric alcohol, polyfunctional epoxide, and dialdehydes.

[Claim 5] The pressure sensitive adhesive sheet for multilayer gel-structure living bodies according to claim 4 which is at least one sort chosen from a group which a polymerization nature unsaturated monomer becomes from acrylamide (meta) and its derivative, vinyl pyrrolidone, acrylic acid (meta), and its salt.

[Claim 6] The pressure sensitive adhesive sheet for multilayer gel-structure living bodies according to any one of claims 1 to 5 which laminated textile fabrics or a nonwoven fabric whose numerical aperture is large enough on an inside or the surface of said pressure sensitive adhesive sheet.

[Claim 7] Cosmetics forming from the pressure sensitive adhesive sheet for multilayer gel-structure living bodies according to any one of claims 1 to 6.

[Claim 8]Quasi drugs forming from the pressure sensitive adhesive sheet for multilayer gel-structure living bodies according to any one of claims 1 to 6.

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## [Detailed Description of the Invention]

[0001]

[Field of the Invention]This invention about the pressure sensitive adhesive sheet for living bodies which is used for fields, such as drugs, quasi drugs, cosmetics, hygienic goods, and general merchandise, and which has the multilayer gel structure in more detail, It excels in user-friendliness, a feel, and plasticity, and is related with the pressure sensitive adhesive sheet for multilayer gel-structure living bodies which visual sense of incongruity does not produce even if it sticks on the skin.

[0002]

[Description of the Prior Art]Conventionally, [ as pressure sensitive adhesive sheets for living bodies, such as the charge of a pack used for the therapy of cosmetics, facial treatment, and the skin, etc., patches or a percutaneous absorption agent, adhesive tape for living bodies, a wound dressing agent, and a resolution painkiller, ] From viewpoints of the ease of handling, the obstruction effect to a skin surface, etc., the thing to which the adhesion gel of the hydrophilicity which made various kinds of active principles contain on this supporting substrate was made to adhere is used by making sheet shaped materials, such as a nonwoven fabric, textile fabrics, and a plastic film, into a supporting substrate. However, since there was almost no hole density in order to prevent the strike-through of an adhesion gel, and an opaque thing was used, there was a problem that the visual sense of incongruity at the time of sticking on a skin surface was large, and the time and a place were greatly restricted when using the pressure sensitive adhesive sheet for living bodies in said nonwoven fabric or textile fabrics.

[0003]On the other hand, since the whole pressure sensitive adhesive sheet for living bodies can be made transparent if a plastic film is used as a supporting substrate, it cannot be conspicuous at the time of use, and can provide the pressure sensitive adhesive sheet which does not give visual sense of incongruity, but. The adhesive property of the adhesion gel of hydrophilicity and a plastic film is scarce, and since both sides exfoliate easily, fault arises on the occasion of the use. Since a plastic film lacked in plasticity, there was a problem of it having become the pressure sensitive adhesive sheet for living bodies fully being unable to follow to a motion of a skin surface, but being easy to exfoliate from a skin surface, or following sense of incongruity on the skin at the time of use.

[0004]

[Problem to be solved by the invention]In order to solve above-mentioned SUBJECT, [ JP,H3-86806,A or JP,H3-167117,A ] The gel produced in gelatin by making a polyvalent metal ionic compound, aldehyde, polyhydric alcohols, or saccharides react is used as a supporting substrate, A sheet-shaped packing agent or patches using the hydrous gel produced by making polyacrylic acid system polymer react to a polyvalent metal ionic compound as an adhesive layer is indicated.

[0005]if the packing agent of an indication, etc. are used for the above-mentioned gazette, gelatin as a supporting substrate and the both sides of hydrous gel used for an adhesive layer are transparent -- it is -- carrying out -- it originates in a translucent thing, and when it sticks on a skin surface, visual sense of incongruity does not arise. The fault that both sides exfoliate at the time of use since both a supporting substrate and an adhesive layer consist of gels does not arise, but since the flattery nature to a motion of a skin surface becomes still better, conventional SUBJECT that it is easy to exfoliate from a skin surface

is also solvable.

[0006]However, since the gel which uses gelatin as a principal component has another problem that the stability over heat is scarce, if saved in the status that atmospheric temperature is high, when a product's own shape will be spoiled, for example, it will pack up and convey at summer, the problem that a product deteriorates produces it notably. Since gelatin is a natural product, even if it tends to decompose a gel, blends a lot of antiseptics and prevents putrefaction of a gel, it will be a use in which a gel touches a human body directly with a not desirable thing. There is a problem also from a quality stability viewpoint -- gelatin has dispersion in quality, because is a natural product.

[0007]Then, the purpose of this invention solves above-mentioned SUBJECT, and it has the transparency of the grade which does not produce visual sense of incongruity, It is providing the pressure sensitive adhesive sheet for living bodies (that is, it excelled in preservation durability) which neither ablation nor destruction arose at at the time of use, and was excellent in the flattery nature to a motion of the skin, and was excellent in thermal stability or septicity-proof.

[0008]

[Means for solving problem]In order that this invention persons may solve above-mentioned SUBJECT, as a result of inquiring wholeheartedly, [ as the adhesive layer and supporting substrate of the pressure sensitive adhesive sheet for living bodies ] When these are laminated to a thickness direction using the gel object of the synthetic macromolecule in which presentations differ mutually, the new fact that the pressure sensitive adhesive sheet for multilayer gel-structure living bodies which solved above-mentioned SUBJECT can be obtained is found out, and it came to complete this invention.

[0009]That is, the adhesive layer concerned and base layer are laminated by the thickness direction including the adhesive layer and base layer which the pressure sensitive adhesive sheet for multilayer gel-structure living bodies of this invention becomes from the gel object of the synthetic macromolecule which has network structure including water at least as a solvent and which differ in gel composition mutually. Since an adhesive layer and a base layer consist of a gel object, respectively according to the pressure sensitive adhesive sheet for multilayer gel-structure living bodies of above-mentioned this invention, while becoming what was excellent in the flattery nature to the fitting feeling to the skin, and a motion of the skin, the adhesive property of an adhesive layer and a base layer is good, and ablation between both layers does not arise at the time of use.

[0010]It originates in the gel composition of an adhesive layer and a base layer differing, and the adhesion characteristics of both layers also differ. Therefore, according to the pressure sensitive adhesive sheet of this invention, the operativity at the time of sticking on the skin or removing can be made good by setting up so that the tackiness may become lower than an adhesive layer about a base layer to such an extent that the tackiness will become sufficient to the skin about an adhesive layer.

[0011][ as an adhesion degree of the adhesive layer and base layer in the pressure sensitive adhesive sheet for multilayer gel-structure living bodies of this invention ] In the case where it measures from the above-mentioned viewpoint with the inclination type ball tackiness device (20 angles of inclination) of a description to JIS Z 0237-1991"adhesive tape and a pressure sensitive adhesive sheet test method", It is preferred to be adjusted so that the difference of the ball number of an adhesive layer and a base layer may become one or more and the ball number of an adhesive layer may serve as the range of 2-50.

[0012]The gel object which constitutes the adhesive layer and base layer in a pressure sensitive adhesive sheet of above-mentioned this invention is transparent or translucent like gelatin or hydrous gel which constitutes the supporting substrate and adhesive layer in said JP,H3-86806,A or JP,H3-167117,A.

Therefore, when the aspect of the pressure sensitive adhesive sheet of this invention is also transparent or translucent and this is stuck on the skin, visual sense of incongruity does not arise.

[0013] Since each gel object which constitutes the above-mentioned adhesive layer and a base layer is not the gel object of naturally-occurring-polymers systems, such as gelatin, but a gel object of a synthetic macromolecule system, the pressure sensitive adhesive sheet of this invention becomes the thing excellent in preservation durability or quality stability. [ as synthetic macromolecule which has the network structure which constitutes a gel object in the pressure sensitive adhesive sheet for multilayer gel-structure living bodies of above-mentioned this invention ] (a) The copolymer of one sort or two sorts or more of polymerization nature unsaturated monomers, and a bridge formation nature unsaturated monomer, Or the hydrophilic synthetic macromolecule produced by polymerizing one sort or two sorts or more of polymerization nature unsaturated monomers which have at least one sort of functional groups chosen from the group which becomes the (b) side chain from a hydroxyl group, a carboxyl group, an amide group, and an amino group, It is preferred that it is a structure-of-cross-linkage object acquired by reacting at least one sort of bridge formation sex factors chosen from the group which consists of a polyvalent metal ionic compound, polyvalent carboxylic acid, a polyhydric alcohol, polyfunctional epoxide, and dialdehydes.

[0014] It is preferred that it is at least one sort chosen from the group which consists of acrylamide (meta) and its derivative, vinyl pyrrolidone, acrylic acid (meta), and its salt as the above-mentioned polymerization nature unsaturated monomer. The textile fabrics or the nonwoven fabric whose numerical aperture is large enough may be laminated on the inside or the surface of a pressure sensitive adhesive sheet in the range which does not spoil the transparency of a pressure sensitive adhesive sheet from a viewpoint of raising the hardness and handling nature in the pressure sensitive adhesive sheet for multilayer gel-structure living bodies of above-mentioned this invention.

[0015] On the other hand, the cosmetics and quasi drugs of this invention were formed from the pressure sensitive adhesive sheet for multilayer gel-structure living bodies of above-mentioned this invention. In this invention, "the pressure sensitive adhesive sheet for living bodies" refers to the pressure sensitive adhesive sheet used for the purpose of the therapy of cosmetics, such as the charge of a pack, patches, a percutaneous absorption agent, adhesive tape for living bodies, a wound dressing agent, and a resolution painkiller, facial treatment, and the skin, etc. sticking on the skin.

[0016]

[Mode for carrying out the invention] Hereafter, this invention is explained in detail. in the pressure sensitive adhesive sheet for multilayer gel-structure living bodies of this invention, the gel object which constitutes an adhesive layer and a base layer comprises synthetic macromolecule which has network structure at least, and a solvent containing water -- desirable -- colorlessness -- or it was colored -- transparent -- it is -- carrying out -- it is translucent and has firmness

[0017] (Solvent) As for the rate of the water occupied on the gel object which constitutes an adhesive layer and a base layer, it is preferred that it is 1 to 99 weight %. When the rate of the water occupied on a gel object is less than 1%, there is a possibility that it may become impossible to melt easily various additives, such as medicinal properties blended into a gel, etc. On the contrary, when the rate of the water occupied on a gel object exceeds 99 weight %, there is a possibility that it may become difficult for the waist hardness of a gel object to become weak, or to keep stable additives confined in the gel inside of the body, such as a solvent and medicinal properties. As for especially the rate of the water occupied on a gel object, it is preferred that it is 5 to 95 weight % also in a mentioned range, and it is

more preferred that it is 10 to 85 weight %.

[0018]As a solvent which constitutes the above-mentioned gel object, water and phase separation besides water are not caused, and conventionally, if it is the solvent currently used as an endermic use in fields, such as cosmetics, drugs, quasi drugs, hygienic goods, and general merchandise, after mixing this with water, it can be used. As this solvent, polyhydric alcohols, such as glycols, such as monoalcohol, such as ethyl alcohol, and 1,3-butylene glycol, and glycerol, are mentioned, for example, and these are independent, or can mix and use two or more sorts.

[0019]As for the rate of solvents other than the water occupied on a gel object, it is preferred that it is 98 or less weight %. When this rate exceeds 98 weight %, there is a possibility that it may become impossible to dissolve easily various kinds of additives which are blended with the gel inside of the body. There is a possibility that it may become difficult for the waist hardness of a gel object to become weak, or to keep stable additives confined in the gel inside of the body, such as a solvent and medicinal properties.

[0020](Synthetic macromolecule which has network structure), [ as synthetic macromolecule which constitutes said gel object and which has network structure ] There are water and compatibility, it is not limited especially except that the gel structure is held and it is conventionally used as an endermic use in fields, such as cosmetics, drugs, quasi drugs, hygienic goods, and general merchandise, after saving for one month at at least 60 \*\*, but various synthetic macromolecules can be used.

[0021]The viewpoint that manufacture is easy to (a) especially The copolymer of one sort or two sorts or more of polymerization nature unsaturated monomers, and a bridge formation nature unsaturated monomer, Or the hydrophilic synthetic macromolecule produced by polymerizing one sort or two sorts or more of polymerization nature unsaturated monomers which have at least one sort of functional groups chosen from the group which becomes the (b) side chain from a hydroxyl group, a carboxyl group, an amide group, and an amino group, The structure-of-cross-linkage object acquired by reacting at least one sort of bridge formation sex factors chosen from the group which consists of a polyvalent metal ionic compound, polyvalent carboxylic acid, a polyhydric alcohol, polyfunctional epoxide, and dialdehydes is used suitably.

[0022]The polyvinyl alcohol etc. which are produced by polymerizing and hydrolyzing a vinyl acetate monomer into a side chain as hydrophilic synthetic macromolecule which has a hydroxyl group are mentioned. As hydrophilic synthetic macromolecule which has a carboxyl group, what neutralized a part or all of poly(meta) acrylic acid or its carboxyl group with alkalis, such as sodium hydroxide, is mentioned to a side chain. As hydrophilic synthetic macromolecule which has an amide group, poly (meta) acrylamide, poly N,N'-dimethyl(meta) acrylamide, polyvinyl pyrrolidone, poly N-vinylacetamide, etc. are mentioned to a side chain. As hydrophilic synthetic macromolecule which has an amino group, what neutralized a part or all of polyallylamine or its amino group from acids, such as hydrochloric acid, poly methacryloyl bird methyloxy chloride ethylammonium, etc. are mentioned to a side chain.

[0023]The monomer which constitutes the above-mentioned hydrophilic synthetic macromolecule may have the functional group which denaturalized these other than a hydroxyl group, a carboxyl group, an amide group, and an amino group. For example, treatment which esterifies and makes lipophilic the hydroxyl group in hydrophilic synthetic macromolecule and about 40% of carboxyl groups for the purpose of improvement in the adhesion to the skin may be performed. When a side chain has a long saturated hydrocarbon portion, A hydroxyl group, a carboxyl group, an amide group, an amino group,

etc. may be further introduced for the purpose of giving hydrophilicity to the portion concerned, the functional group which is tinged with the ionicity of a sulfonic group, a phosphate group, etc. may be introduced, or it may process with reagents, such as an acid and an alkali. These treatment may be performed before the polymerization of a monomer and it may carry out after a polymerization.

[0024]As a polymerization nature unsaturated monomer, for example (meta) Acrylamide;t-butyl acrylamide sulfonic acid (and the salt), Derivative; vinyl pyrrolidone of acrylamide (meta), such as N,N'-dimethylacrylamide and dimethylaminopropyl methacrylamide; (meta) it is suitably used from viewpoints of acrylic acid (and the salt) etc. being easy to manufacture, and there being. Said polymerization nature unsaturated monomer is independent, or mixes two or more sorts and is used.

[0025]As a bridge formation nature unsaturated monomer, N,N'-methylenebis acrylamide, N,N'-methylenebis methacrylamide, N,N'-ethylenebis acrylamide, N,N'-ethylenebis methacrylamide, 1,2-Gia Kurile amidoethylene glycol, etc. are mentioned, for example. As a bridge formation sex factor, a polyvalent metal ionic compound, polyvalent carboxylic acid, a polyhydric alcohol, polyfunctional epoxide, and dialdehydes are mentioned as mentioned above.

[0026]Among these, as a polyvalent metal ionic compound, an aluminium compound, a lime compound, a magnesium compound, etc. are mentioned, for example. Aluminium hydroxide from a viewpoint of bridge formation efficiency and its salt, synthetic aluminum silicate especially, Magnesium aluminometasilicate, a magnesium aluminum oxide, An aluminum oxide, dihydroxy aluminium amino acetate, The compound containing trivalent Al ion, such as a magnesium aluminium hydroxide carbonate hydrate and an aluminium hydroxide sodium carbonate coprecipitate, is preferred, and what is an amorphous structure further is more preferred. As polyvalent carboxylic acid, succinic acid, fumaric acid, phthalic acid, citric acid, malic acid, etc. are mentioned, for example. As a polyhydric alcohol, ethylene glycol, propylene glycol, butanediol, glycerol, diethylene glycol, diglycerol, etc. are mentioned, for example. As polyfunctional epoxide, for example Ethylene glycol diglycidyl ether, Polyethylene glycol diglycidyl ether, propylene glycol diglycidyl ether, Polypropylene glycol diglycidyl ether, polytetramethylene glycol diglycidyl ether, Glycerol polyglycidyl ether, polyglycerol polyglycidyl ether, Sorbitol polyglycidyl ether, sorbitan poly glycidyl ether, Trimethylolpropane-polyglycidyl-ether, pentaerythritol-polyglycidyl-ether, resorcinol diglycidyl ether, neopentyl-glycol-diglycidyl-ether, 1, and 6-hexanediol diglycidyl ether etc. are mentioned. As dialdehydes, glyoxal, terephthalaldehyde, glutaraldehyde, etc. are mentioned, for example.

[0027]As for the loadings of the synthetic macromolecule which has network structure which constitute the gel object concerned, in the gel object which constitutes the pressure sensitive adhesive sheet for multilayer gel-structure living bodies of this invention, i.e., an adhesive layer gel, and a base layer gel, it is preferred that it is 1 to 50 weight % to the total amount of each gel object. When the loadings of said synthetic macromolecule are less than 1 weight %, there is a possibility that the waist hardness of a gel object may become weak and it may become difficult to keep stable additives confined in the gel inside of the body, such as a solvent and medicinal properties. On the contrary, if it exceeds 50 weight %, although gel strength will become strong, the polymer structure of a gel object becomes dense too much, and there is a possibility that quantity which can be held to the gel inside of the body, such as a solvent and medicinal properties, may decrease too much. As for especially the loadings of synthetic macromolecule, it is preferred that it is 3 to 30 weight % also in a mentioned range, and it is more preferred that it is 5 to 25 weight %.

[0028]As for the loadings of a bridge formation nature unsaturated monomer, when using the copolymer

of the above (a) as synthetic macromolecule which has network structure, it is preferred that it is 0.005 to 0.5 weight % to the total amount of each gel object. There is a possibility that the gel object which has sufficient waist hardness will become is hard to be acquired if loadings are less than 0.005 weight %, and it may become difficult to keep stable additives confined in the gel inside of the body, such as a solvent and medicinal properties. On the contrary, when loadings exceed 0.5 weight %, the brittleness of the gel object acquired increases and there is a possibility of becoming easy to produce amputation and destruction by tensile stress or compressive stress.

[0029]On the other hand, as for the loadings of a polyvalent metal ionic compound, when a bridge formation sex factor uses the structure-of-cross-linkage object of the above (b) which is a polyvalent metal ionic compound as synthetic macromolecule which has network structure, it is preferred that it is 0.1 to 10 weight % to the total amount of each gel object. As for the loadings of polyvalent carboxylic acid or a polyhydric alcohol, when a bridge formation sex factor is polyvalent carboxylic acid or a polyhydric alcohol, it is preferred that it is 0.1 to 5 weight % to the total amount of each gel object. As for the loadings of polyfunctional epoxide or dialdehydes, when bridge formation sex factors are polyfunctional epoxide or dialdehydes, it is preferred that it is 0.01 to 3 weight % to the total amount of each gel object.

[0030]When the loadings of bridge formation sex factors, such as a polyvalent metal ionic compound, are less than said range, there is a possibility that the waist hardness of the synthetic polymer gel object acquired may become weak, and it may become difficult to keep stable additives confined in the gel inside of the body, such as a solvent and medicinal properties. On the contrary, when the amount of addition exceeds said range, the brittleness of a gel object increases and there is a possibility of becoming easy to produce amputation and destruction by tensile stress or compressive stress.

[0031]What is necessary is just to follow a publicly known means conventionally in this invention as a method of making the gel object which constitutes the pressure sensitive adhesive sheet for multilayer gel-structure living bodies, i.e., an adhesive layer gel, and a base layer gel forming.

[Lamination of the pressure sensitive adhesive sheet for multilayer gel-structure living bodies] The pressure sensitive adhesive sheet for multilayer gel-structure living bodies of this invention laminates at least two kinds of gel objects in which gel composition differs to a thickness direction.

[0032]In this invention, at least, "gel composition differs" differs in the kind of synthetic macromolecule which has network structure, and, as a result, means that the hardness of a gel object, elasticity, adhesion characteristics, compatibility with other solvents, drying property, etc. are physical, and that chemical properties differ. [ it ] Therefore, the polymerization nature unsaturated monomer which constitutes the synthetic macromolecule which has network structure, [ not only in when the kinds of a bridge formation nature unsaturated monomer or bridge formation sex factor differ ] (1) The kind of the case where each blending ratio of the completely same thing differs in the kind of a polymerization nature unsaturated monomer, a bridge formation nature unsaturated monomer, or bridge formation sex factor, (2) polymerization nature unsaturated monomer and a bridge formation nature unsaturated monomer, or bridge formation sex factor, Even if the blending ratio is completely the same, also when polymerization reaction conditions differ from crosslinking reaction conditions, the conditions "gel composition differs" are fulfilled.

[0033]The lamination status in particular of each gel objects which constitute the whole pressure sensitive adhesive sheet for living bodies, such as an adhesive layer and a base layer, in the pressure sensitive adhesive sheet for multilayer gel-structure living bodies of this invention is not what is limited,

A specific layer besides the status that all the layers are completely laminated in the same shape may be in the status that other layers and shape differ from each other, and the status that the gel body whorl of the shape of a face or parts of the body and the pattern form doubled with the contour was laminated on the specific gel body whorl.

[0034]Although what is necessary is just to set up suitably about the thickness of the layer of each gel object according to the use situation of a pressure sensitive adhesive sheet, it is preferred that it is 0.05 mm or more from a viewpoint of manufacturing ease. About the thickness of the whole pressure sensitive adhesive sheet, although it may be uniform to the whole or thickness may differ partially, when sense of incongruity and hardness when it sticks on the skin are taken into consideration, it is preferred that it is the range of 0.1-3 mm. When the thickness of the whole pressure sensitive adhesive sheet is less than 0.1 mm, there is a possibility that the hardness of a pressure sensitive adhesive sheet may become weak. On the other hand, when it exceeds 3 mm, and prudence of a sheet becomes large too much and sticks on the skin, there is a possibility that sense of incongruity may arise. If the whole pressure sensitive adhesive sheet is not thick, it is possible to make thickness of a sheet partially thick to about 6 mm.

[0035][Adhesion characteristics of an adhesive layer and a base layer], etc. An adhesive layer and a base layer are contained in the pressure sensitive adhesive sheet for multilayer gel-structure living bodies of this invention. Among these, a surface is constituted and a base layer constitutes [ in / in an adhesive layer / the pressure sensitive adhesive sheet for multilayer gel-structure living bodies of this invention ] the surface of another side. An adhesive layer is a surface for sticking a pressure sensitive adhesive sheet on the skin. This adhesive layer does not separate easily, when it sticks on the skin, and it is formed with a gel object with the chemical property which may fully be stuck to the skin.

[0036]On the other hand, when a base layer sticks a pressure sensitive adhesive sheet on the skin, it is a surface located in the opposite side of a skin surface. This base layer is formed with the gel object which made the degree of adhesion with the skin weaker than an adhesive layer or from which the tackiness to the skin was removed, in order to perform the operation smoothly, when sticking a pressure sensitive adhesive sheet on the skin. In this invention, it measures with an adhesive degree with the inclination type ball tackiness device (20 angles of inclination) of a description to JIS Z0237-1991 "adhesive tape and a pressure sensitive adhesive sheet test method."

[0037]Since all are expressed as "the ball number 32" about the field (namely, when an adhesion degree is very large) where the adhesion degree shown by a ball number is larger than 32 according to the regulation of above-mentioned JIS, the adhesion degree in this field cannot be evaluated properly. then, the ball specified to JIS B 1501-1988 in this invention in order that an adhesion degree may evaluate an adhesion degree properly also in a very large field -- calling (the appended chart 1, the 2nd column) -- we decided to call from "1" to say and to use a ball with a large diameter. the ball number in this case -- a ball -- calling (the 2nd column) -- they could be said number of 32 times to call like the case where one or less thing is used. When a ball number exceeded 32, measurement of the adhesion degree was performed like the above-mentioned method.

[0038]In order to raise the operativity of the pressure sensitive adhesive sheet for multilayer gel-structure living bodies of this invention, That is, in order to enable it to perform smoothly operation at the time of sticking a pressure sensitive adhesive sheet on the skin, it is preferred that there are three or more differences of the adhesion degree of the adhesive layer and base layer by the above-mentioned inclination type ball tackiness examination preferably one or more by a ball number. The adhesion



characteristics for which the layers of an adhesive layer and a base layer are asked are set up according to the purpose of using a pressure sensitive adhesive sheet, and an application site, and are not especially limited. However, generally, as for the ball number of an adhesive layer, when setting application to a face as the main purpose, it is preferred that it is 2-40, and it is more preferred that it is 3-30. When aiming at application to parts of the body other than a face, it is preferred that it is 4-50, and it is more preferred that it is 5-32. When the ball number of an adhesive layer becomes larger than the upper limit shown in these ranges, after sticking a pressure sensitive adhesive sheet on the skin, when removing this, a pain may be sensed or displeasure may be sensed. In being less than a lower limit, the adhesion at the time of sticking a pressure sensitive adhesive sheet on the skin is missing, and there is a possibility of separating easily.

[0039]When the ball number by the side of an adhesive layer is 2, the result of the ball tackiness examination about a base layer becomes smaller than 2, and measured value is not acquired by regulation of above-mentioned JIS. Then, in this invention, it was presupposed "the difference of the ball number of an adhesive layer and a base layer is one or more" the case where it is so small that the measured value of the adhesion degree of a base layer does not come out by regulation of above-mentioned JIS.

[0040]In order to control the tackiness of a gel object, [ in this invention ] For example, what is necessary is just to follow conventionally publicly known means, such as controlling a degree of polymerization or adjusting the loadings of the bridge formation nature unsaturated monomer to a gel object total amount, or a bridge formation sex factor, by adjusting the loadings of the polymerization nature unsaturated monomer to the total amount of a gel object, and the kind of polymerization initiator and loadings. That is, the adhesion degree of the gel object acquired can be lowered by raising a degree of polymerization or making more the loadings of a bridge formation nature unsaturated monomer or a bridge formation sex factor. What is necessary is just to perform operation contrary to the above for raising the adhesion degree of a gel object. The adhesion degree of a gel object can also be raised by adding a tackifier.

[0041]In the pressure sensitive adhesive sheet for multilayer gel-structure living bodies of this invention, Without hurting the transparency of a pressure sensitive adhesive sheet The tearing strength of a pressure sensitive adhesive sheet, The textile fabrics or the nonwoven fabric in which hole density is large enough can be laminated on the surface of one of layers, etc. the interface of an adhesive layer and a base layer, the inside of said each layer, and, for example among said each layers for the purpose of raising the handling nature to a motion of the skin surface at the time of sticking a pressure sensitive adhesive sheet on the skin.

[0042]Even if the textile fabrics or the nonwoven fabric with the above-mentioned large hole density lets textile fabrics or a nonwoven fabric pass, it refers to a thing with large hole density (transparency was maintained) to such an extent that it can decipher the printing type of ten points. Even if the part which laminates this textile fabrics or nonwoven fabric is an inside of a single gel layer of each gel body whorl which constitutes a pressure sensitive adhesive sheet, it may be the different interface of a gel body whorl or surface of a pressure sensitive adhesive sheet, but it is preferred that it is an inside of the gel object which constitutes a base layer.

[0043]Although surface one side is an adhesive layer and another side comprises a base layer, [ the pressure sensitive adhesive sheet for multilayer gel-structure living bodies of this invention ] another layer (inner layer) in which gel composition furthermore differs from these layers among both surfaces

according to the purpose of using a pressure sensitive adhesive sheet, and uses (for example, buffer coat etc.) -- one sort -- or two or more sorts may be included. The pressure sensitive adhesive sheet for multilayer gel-structure living bodies of this invention has the structure where each layer was formed in one, including the aforementioned inner layer.

[0044][Additive] According to the purpose of using the pressure sensitive adhesive sheet for living bodies, various kinds of additives other than the synthetic macromolecule which has network structure, and the solvent which contains water at least are blended with each gel object which constitutes the pressure sensitive adhesive sheet for multilayer gel-structure living bodies of this invention. As this additive, a thickener, perfume, a moisturizer, a coloring agent besides medicinal properties aiming at the therapy of cosmetics, facial treatment, and the skin, etc., a stabilizer, an antioxidant, an ultraviolet ray absorbent, a tackifier, a pH adjuster, a chelating agent, a surface active agent, antiseptics, antibacteria medicine, etc. are mentioned, for example.

[0045]It is not what will be limited as the above-mentioned medicinal properties especially if conventionally used with drugs, quasi drugs, cosmetics, hygienic goods, general merchandise, etc., For example, the Angelica keiskei extractives, avocado extractives, the Hydrangeae dulcis folium extractives, althea extractives, Arnica extractives, an aloe extract, apricot extractives, apricot nucleus extractives, ginkgo tree extractives, fennel extractives and curcmae rhizoma -- extractives, an oolong tea extract, and the Rose Fruit extractives. Echinacea leaf extract, Scutellaria root extractives, cork tree bark extractives, coptis root extractives, Hordeum vulgare extractives, St. John's wort extractives, a Lamium album var. barbatum extract, the Netherlands mustard extractives, Orange extractives, a sea water dry matter, seaweed extractives, hydrolysis elastin, the end of hydrolysis wheat, Hydrolysis silk, chamomile extract, carotte extractives, the Artemisia capillaris extractives, A glycyrrhiza extract, the Karkade extractives, the Pyracantha fortuneana extractives, kiwi extractives, chinae-cortex extractives, cucumber extract, guanosine, and a gardenia -- extractives and low bamboo extractives. The Sophora angustifolia extractives, walnut extractives, grapefruit extractives, KUREMATISU extractives, a chlorella extract, mulberry extractives, a gentiana extract, tea extractives, a yeast extract, burdock extractives, rice bran fermentation extractives, rice germ oil, comfrey extractives, collagen, Cowberry leaf extractives, wild ginger extractives, the Phycho extractives, a SAITAI extract, Salvia extractives, soapwort extractives, SASAEKISU, white thorn extractives, Physalis radix extractives, shiitake mushroom extractives, JIOUEKISU, lithospermi radix extractives, SHISOEKISU, bee tree extractives, meadowsweet extractives, peony extractives, Calamus extractives, Betula-alba extractives, a field horsetail extract, SEIYOUKIZUTA extractives, Haw extractives, bourtree extractives, the Achillea millefolium extractives, Peppermint tree extractives, sage extractives, mallow extractives, cnidium rhizome extractives, Sialid extractives, DAIZUEKISU, zizyphi fructus extractives, a thyme extract, a tea extract, Caryophylli flos extractives, Japanese-blood-grass extractives, CHIMPIEKISU, TOUKIEKISU, the Calendula officinalis extractives, Persicae semen extractives, aurantii pericarpium extractives, Houttuynia extractives, tomato extractives, fermented-soybeans extractives, Ginseng extractives, garlic extractives, the Novara extractives, a hibiscus extract, the Ophiopognis Tuber extractives, parsley extractives, honey, hamamelis extractives, the Parietaria extractives, the Isodon japonicus extractives, bisabolol, and a loquat -- extractives, coltsfoot extractives, and Japanese butterbur -- extractives, Hoelen extractives, butcherbroom extractives, grape extractives, and propolis. HECHIMAEKISU, carthami flos extractives, a peppermint extract, the Tilia miqueliana extractives, Button extractives, hop extractives, pine extractives, horse chestnut extractives, giant skunk cabbage extractives, Sapindus mukurossi

extractives, the melissa extractives, peach extractives, cornflower extractives, Eucalyptus extractives, creeping saxifrage extractives, yuzu citron extractives, coix seed extract, Mugwort extractives, lavender extractives, apple extractives, lettuce extractives, lemon extract, the Astragalus sinicus extractives, rose extractives, a rosemary extract, the Anthemis nobilis extractives, royal jelly extractives, etc. can be mentioned.

[0046]Deoxyribonucleic acid, the mucopolysaccharide, hyaluronate sodium, sodium chondroitin sulfate, Biopolymers, such as collagen, elastin, chitin, chitosan, and a hydrolysis shell membrane; An amino acid, Sodium lactate, urea, pyrrolidone-carboxylic-acid sodium, betaine, Moisturizing components, such as whey and bird methylglycine; Sphingolipid, ceramide, Oily components, such as cholesterol, a cholesterol derivative, and phospholipid; Epsilon-aminocaproic acid, Glycyrrhizic acid, beta-glycyrrhizic acid, lysozyme chloride, GUAI azulene, Anti-inflammatory agents, such as hydrocortisone; Vitamin A, B-2, B6, C, D, E, Vitamins, such as calcium pantothenate, biotin, nicotinamide, and vitamin-C ester; Allantoin, Active ingredients, such as diisopropylamine dichloro acetate and 4-aminomethyl cyclohexane carboxylic acid; TOKOFENORU, Anti-oxidant; alpha-hydroxy acid, such as carotinoide, flavonoid, tannin, lignan, and saponin, Cell activators, such as beta-hydroxy acid; Wound healing agent; arbutin, such as circulation accelerator; retinols, such as \*-oryzanol and a vitamin E derivative, and a retinol derivative, kojic acid, placental extract, sulfur, Whitening agents, such as ellagic acid, linolic acid, tranexamic acid, and glutathione; Cepharanthin, Licorice extract, capsicum tincture, hinokitiol, iodination garlic extractives, Pyridoxine hydrochloride, dl-\*-tocopherol, acetic acid dl-\*-tocopherol, Nicotinic acid, a nicotinic acid derivative, calcium pantothenate, D-punt thenyl alcohol, Acetyl punt thenyl ethyl ether, biotin, allantoin, isopropylmethyl phenol, Estradiol, ethynyl S tera diol, chloridation KAPURONIUMU, A benzalkonium chloride, diphenhydramine hydrochloride, a hawk knurl, camphor, Salicylic acid, nonylic acid vanillylamide, nonanoic acid vanillylamide, piroctone olamine, Pentadecanoic acid glyceryl, 1-menthol, mononitro guaiacol, Resorcinol, gamma-aminobutyric acid, chloridation BENZETONIUMI, mexiletine hydrochloride, Auxin, a female sex hormone, cantharides tincture, cyclosporin, hydrocortisone, monostearin acid polyoxyethylene sorbitan, mentha oil, a painkiller, a tranquilizer, an antihypertensive drug, antibiotics, an antihistamine, an antibacterial substance, a vegetable origin component, a seaweed origin component, etc. are mentioned.

[0047]Since the loadings of medicinal properties differ in the amount of active principles by the material, they cannot generally be specified, but it is preferred that it is generally 0.001 to 80 weight % to the total amount of the pressure sensitive adhesive sheet for living bodies, and it is more preferred that it is 0.05 to 10 weight %. As a moisturizer, for example Ethylene glycol, propylene glycol, Butylene glycol, diethylene glycol, dipropylene glycol, Glycols, such as glycerol, diglycerol, sorbitol, a MARUBI torr, trehalose, raffinose, xylitol, mannitol, hyaluronic acid and its salt, polyethylene glycol, and polyglycerin, polyhydric alcohols, polysaccharide, etc. are mentioned. These are independent, or can mix and use two or more sorts.

[0048]A moisturizer gives a moisturizing effect to the skin which sticks a pressure sensitive adhesive sheet, and also can show the following operations. [ namely the moisture content included by one gel object among each gel object which constitutes a pressure sensitive adhesive sheet ] Compared with other gel objects contiguous to the gel object, in considerable quantities, when large, water may move to the direction of other adjoining gel objects with comparatively few moisture contents from the direction of a gel object with many moisture contents, as a result, the latter gel object may expand, and curvature may arise in the whole pressure sensitive adhesive sheet. Such curvature can be prevented by adding a

considerable quantity of moisturizers on the gel object of the former with many moisture contents. Since the quantity of the moisturizer which is blended in this case is concerned with the difference of water retention capability with a different gel object and the moisturizer's own water retention capability to adjoin, cannot generally specify, but. Generally it is preferred to the gel inside of the body with many moisture contents that it is 0.1 to 80 weight % to the total amount of the gel object, and it is more preferred that it is 1 to 30 weight %.

[0049]As a thickener, it is little comparatively, and that in which the blend liquid before gelling has a certain amount of viscosity is preferred, for example, water soluble polymers, such as polyethylene oxide and hydroxyethyl cellulose, are mentioned. As for the loadings of a thickener, it is preferred that it is 0.01 to 20 weight % to the total amount of a gel object, and it is more preferred that it is 0.05 to 10 weight %.

[0050]The above-mentioned additive is added according to the purpose of using the pressure sensitive adhesive sheet for multilayer gel-structure living bodies of this invention, and a use on the gel object more than [ of each gel object which constitutes the pressure sensitive adhesive sheet concerned / one specific layer or two-layer ], or all the gel objects. For example, what is necessary is to concentrate on the adhesive layer nearest to the skin, and just to add medicinal properties, in aiming at carrying out percutaneous absorption of the medicinal properties in immediate effect. What is necessary is to add suitable medicinal properties to a surface adhesive layer, and just to add medicinal properties also on other gel objects, in order not to carry out percutaneous absorption of the medicinal properties quickly and to take out a certain amount of delayed effect or durability.

[0051]Each gel object which constitutes the pressure sensitive adhesive sheet for multilayer gel-structure living bodies of this invention can choose the kind of synthetic macromolecule which has network structure, the kind of solvent containing water, a presentation, etc. according to the purpose of using a pressure sensitive adhesive sheet, and a use. When [ for example, ] aiming at sticking the pressure sensitive adhesive sheet for living bodies on a face etc., and taking out the tightening effect of the skin, What is necessary is to use the rate of the water in the solvent which constitutes an adhesive layer as 70weight % or more of the gel object which constitutes an adhesive layer, and just to consider it as the synthetic macromolecule which made the subject the polymerization nature unsaturated monomer which has carboxyl groups, such as acrylic acid (meta) or its salt, for the synthetic macromolecule which has the network structure which constitutes said gel object. Evaporation of the water which is inherent in the inside of a pressure sensitive adhesive sheet can be promoted by this, and the aforementioned purpose can be attained.

[0052]On the contrary, what is necessary is just to make the rate of the water of each gel inside of the body into 20 or less weight % to the gel object, when it does not like evaporation of water. It reacts to the functional group which the synthetic macromolecule which has the network structure which constitutes a gel object has, and some various additives added on a gel object spoil the role of an original additive. What is necessary is just to use the synthetic macromolecule which has the network structure which consists only of a functional group which does not react to the additive, in using this additive. For example, although the additive of a cation system reacts to the synthetic macromolecule which consists of a polymerization nature unsaturated monomer which has carboxyl groups, such as anionic acrylic acid (meta) or its salt, Since the synthetic macromolecule which consists of a copolymer of a nonionic polymerization nature unsaturated monomer like acrylamide and N,N' - methylenebis acrylamide and a bridge formation nature unsaturated monomer does not react, the original role of an additive can be

demonstrated by using this synthetic macromolecule.

[0053][A manufacturing method of the pressure sensitive adhesive sheet for multilayer gel-structure living bodies] Next, the manufacturing method of the pressure sensitive adhesive sheet for multilayer gel-structure living bodies of this invention is explained. [ each gel object which constitutes the pressure sensitive adhesive sheet for multilayer gel-structure living bodies of this invention ] [ as mentioned above the synthetic macromolecule which has the network structure which constitutes the gel object concerned ] (a) The copolymer of one sort or two sorts or more of polymerization nature unsaturated monomers, and a bridge formation nature unsaturated monomer, Or the hydrophilic synthetic macromolecule produced by polymerizing one sort or two sorts or more of polymerization nature unsaturated monomers which have at least one sort of functional groups chosen from the group which becomes the (b) side chain from a hydroxyl group, a carboxyl group, an amide group, and an amino group, It is preferred that it is a structure-of-cross-linkage object acquired by reacting at least one sort of bridge formation sex factors chosen from the group which consists of a polyvalent metal ionic compound, polyvalent carboxylic acid, a polyhydric alcohol, polyfunctional epoxide, and dialdehydes.

[0054][ as a manufacturing method of the gel object at the time of using the copolymer of the polymerization nature unsaturated monomer of the above (a), and a bridge formation nature unsaturated monomer as synthetic macromolecule which has network structure ] For example, the method of polymerizing by adding a polymerization nature unsaturated monomer, a bridge formation nature unsaturated monomer, and a polymerization initiator to the solvent which constitutes a gel object is mentioned. The system which gives heating or light irradiation to a polymerization or from which a polymerization begins by addition of a polymerization initiator may be chosen.

[0055][ as a manufacturing method of the gel object at the time of using the structure-of-cross-linkage object made on the other hand by making the hydrophilic synthetic macromolecule and the bridge formation sex factor of the above (b) react as synthetic macromolecule which has network structure ] For example, the hydrophilic synthetic macromolecule which polymerized like the above-mentioned method beforehand is dissolved, and the method of adding a bridge formation sex factor in this solution, and performing crosslinking reaction is mentioned. It may start with heating and crosslinking reaction may be started by addition of a reactional initiator. The system from which crosslinking reaction begins immediately by addition of a bridge formation sex factor may be chosen.

[0056]In carrying out thermal polymerization using the solution which blended an above-mentioned monomer, a solvent, etc. when the unsaturated monomer of the above (a) was polymerized and a gel object was acquired, Azo polymerization initiators, such as azobis cyano valeric acid and azobis aminopropanedihydrochloride, Or the redox system polymerization initiator which consists of reducing agents, such as ferrous sulfate, dithionite, and pyrosulfite, and peroxide, such as hydrogen peroxide, t-butyl hydroperoxide, and a peroxodisulfuric acid salt, can be added, and it can polymerize. These azo polymerization initiators and a redox system initiator may be used if needed, being independent or mixing. When using a redox system initiator, it is good also as a system from which a polymerization begins only by adding without heating. In carrying out photopolymerization, an acetophenone series, a benzoin ether system, Optical cationic initiators, such as optical radical polymerization initiators, such as a phosphorus system, a benzophenone series, a thioxan ton system, and azo, a diazonium salt, diaryl iodonium salt, and a triarylsulfonium salt, etc. can be added, and it can polymerize.

[0057]The pressure sensitive adhesive sheet for multilayer gel-structure living bodies of this invention laminates the gel object into which the presentation was changed according to the purpose of use and a

use, and forming in one so that each layer may not exfoliate has the feature. For this reason, [ as a manufacturing method of the pressure sensitive adhesive sheet of this invention ] After one gelling is completed among adjoining gel objects, an intermediate stage has advance of the status that gelling does not start, or gelling, the gel object of another side is laminated in the status that flowability remains, and when terminating gelling of the gel object of the another side concerned, the method of making both layers form in one is taken.

[0058]When an adjoining gel object is laminated after both the gelling of both is completed, there is a possibility of starting interlaminar peeling. When making it especially expand and contract in order to stick a pressure sensitive adhesive sheet, or removing from the skin after use, interlaminar peeling happens easily. When an adjoining gel object is laminated in the status that it is in the status that neither of advance of both gelling has started, or an intermediate stage has both gelling, and flowability remains, The interface between gel objects is lost, the compound of the both sides before gelling is completely mixed depending on the case, and there is a possibility that distinction of each gel object may stop sticking.

[0059]It says that the "end of gelling" in this invention changed into the status that the compound before gelling causes a gelling reaction and has firmness. In this invention, thickness adjustment of each gel body whorl is performed by spreading using an extruder, a doctor blade, etc. or filling up a container with predetermined thickness. [ as a laminating method after at least one of each of the gel object which constitutes a pressure sensitive adhesive sheet completes gelling in the above-mentioned manufacturing method ] Use an extruder, a doctor blade, etc. on the layer which gelling ended, and, [ one of the remaining gel objects ] [ the status that the gelling does not start ] Or it is more preferred to take the method of forming each gel body whorl in one by what it laminates in the status that an intermediate stage has advance of gelling and flowability remains, and gelling of this layer is terminated for (the above-mentioned operation is repeated if needed) from a viewpoint of making a manufacturing facility simple.

[0060][ the status that the gelling does not start one of each of the gel object which constitutes a pressure sensitive adhesive sheet ] Or the remaining gel objects (.) that filled up the container with the status that an intermediate stage has advance of gelling and flowability remains, and subsequently already terminated gelling from it Or it is also more preferred to take the method of carrying out one formation of each layer from a viewpoint of making a manufacturing process easy, by laminating the layer with which two or more remaining gel objects were united, and terminating gelling of the former compound for gel formation in which flowability remains further. In this case, if the shape of the container with which it is filled up is formed according to the shape of the pressure sensitive adhesive sheet for living bodies at the time of use, an in-line manufacturing process will become easy and will become more desirable than a manufacturing process top.

[0061]At least plastic films, such as polyethylene, polypropylene, polyethylene terephthalate, on the surface by the side of an adhesive layer until the pressure sensitive adhesive sheet for living bodies of this invention is used, [ status as it is ] Or it is preferred to stick on the surface as a release paper, where release agents, such as silicone resin, are applied for reasons of sanitation. It is preferred to prevent desiccation of a pressure sensitive adhesive sheet, or to stick the above-mentioned release paper also on the surface by the side of a base layer further from sanitary consideration.

[0062]Since the plasticity is scarce and a motion of a skin surface cannot be followed enough, it is necessary to remove the stuck release paper at the time of use. If it is used sticking mold-releasing paper

on the surface of a base layer, while in use, mold-releasing paper will separate from a pressure sensitive adhesive sheet, and it will become difficult to treat it. The above-mentioned release paper may be used as an underlay or facing in the case of the gel manufacturing process of a pressure sensitive adhesive sheet, and after manufacture of a pressure sensitive adhesive sheet is completed, it may be stuck.

[0063] Although there is no restriction in particular as shape of the pressure sensitive adhesive sheet for multilayer gel-structure living bodies of this invention, What is necessary is to mention elliptical, circular, a heart shape, a semi-circle, a half-elliptical, a square, a rectangle, a trapezoid, a triangle, the shape where the application site was met, or these combination, and just to design suitably the shape which can be most appropriately stuck by a use part. If a convex part and a crevice are provided in the central part and the circumference part of a pressure sensitive adhesive sheet for the purpose, such as position doubling, or the \*\* omission portion etc. which are cut deeply and burned according to the shape of a use part are provided in them, the handling nature of a pressure sensitive adhesive sheet can be raised.

[0064] As an application site of the pressure sensitive adhesive sheet for living bodies of this invention, a face (eyes a lip, the regio buccalis, a part, the vertical section of eyes, the regio nasalis, a frame), an arm, the leg, a thoracic part, an abdominal part, regions of back, a neck, etc. are mentioned. What is necessary is just to adjust suitably the shape of the pressure sensitive adhesive sheet for living bodies, area, thickness, the adhesion characteristics of an adhesive layer, etc. according to an application site. For example, when an application site forms the sheet for adhesion which is the whole face. It is considered as the shape where the cut was made in the portion which is equivalent to the position of \*\*\*\* omission and a nose in eyes and the portion equivalent to the position of a mouth as shown in drawing 1, and sticks further, and since area is large, it is preferred to adjust to raise the adhesive power of an adhesive layer or to make thickness into thinness etc.

[0065]

[Working example] Hereafter, an embodiment and a comparative example explain this invention still in detail.

[Manufacture of the pressure sensitive adhesive sheet for living bodies]

With the manufacturing method of the embodiment 1 following, the pressure sensitive adhesive sheet for living bodies of the bilayer gel structure which consists of an adhesive layer and a base layer was produced. The presentation of an adhesive layer gel and the compound for base layer gel formation is shown in Table 1.

[0066]

[Table 1]

## ※ 実施例 1

成 分	重量%
〔粘着層ゲル形成用配合物〕	
親水性合成高分子	
ポリアクリル酸 *1	2.0
ポリアクリル酸ソーダ *2	6.0
架橋性因子	
合成ケイ酸アルミニウム	1.3
保湿剤	
1,3-ブチレングリコール	10.0
防腐剤	
デヒドロ酢酸ソーダ	0.3
薬効成分	
ビタミンC	3.0
精製水	残量
合 計	100.0
〔支持体層ゲル形成用配合物〕	
親水性合成高分子	
ポリアクリル酸 *1	4.0
ポリアクリル酸ソーダ *2	12.0
架橋性因子	
合成ケイ酸アルミニウム	7.0
保湿剤	
1,3-ブチレングリコール	10.0
防腐剤	
デヒドロ酢酸ソーダ	0.3
精製水	残量
合 計	100.0

\*1: 分子量 (Mw) 約 500 万

\*2: 分子量 (Mw) 約 30 万

[0067]said bridge formation sex factor after mixing the component except a bridge formation sex factor (synthetic aluminum silicate) among the compounds for adhesive layer gel formation shown in Table 1, kneading for about 30 minutes at 50 \*\* and making it uniform -- in addition, at 60 more \*\*, it kneaded for about 10 minutes and was made uniform. On the 100-micrometer-thick polypropylene sheet, the doctor blade was used and the compound for adhesive layer gel formation obtained in this way was uniformly spread in thickness of 0.8 mm. By allowing this to stand at a room temperature for about 2 hours, gelling was terminated and the adhesive layer gel was formed.

[0068]On the above-mentioned adhesive layer gel, the compound for base layer gel formation shown in Table 1 was uniformly spread in thickness of 0.5 mm by the same method as the above-mentioned adhesive layer gel, by allowing this to stand at a room temperature for about 2 hours, gelling was terminated and the base layer gel was formed. It pierced in the shape (x= 180 mm in length, and y= 220 mm in width) which puts a 50-micrometer-thick polypropylene sheet on this base layer gel, and is shown in drawing 1, and the target final product was obtained.

[0069]With the manufacturing method of the embodiment 2 following, the pressure sensitive adhesive



sheet for living bodies of the bilayer gel structure which consists of an adhesive layer and a base layer was produced. The presentation of an adhesive layer gel and the compound for base layer gel formation is shown in Table 2.

[0070]

[Table 2]

※ 実施例 2

成 分	重量%
〔粘着層ゲル形成用配合物〕	
重合性不飽和単量体	
アクリルアミド	15.0
架橋性不飽和単量体	
N,N'-メチレンビスアクリルアミド	0.05
重合開始剤	
「イルガキュア 184」*3	0.3
保湿剤	
グリセリン	10.0
防腐剤	
デヒドロ酢酸ソーダ	0.3
薬効成分	
グリチルリジン酸ジカリウム	0.2
精製水	残量
合 計	100.0
〔支持体層ゲル形成用配合物〕	
重合性不飽和単量体	
アクリルアミド	25.0
架橋性不飽和単量体	
N,N'-メチレンビスアクリルアミド	0.3
重合開始剤	
4%過硫酸アンモニウム水溶液	5.0
2%ピロ亜硫酸カリウム水溶液	5.0
保湿剤	
グリセリン	20.0
防腐剤	
デヒドロ酢酸ソーダ	0.3
薬効成分	
グリチルリジン酸ジカリウム	0.2
精製水	残量
合 計	100.0

\*3: 商品名 チバガイギー社製

[0071][ among the compounds for base layer gel formation shown in Table 2 ] [ the component except a polymerization initiator (a 4% ammonium persulfate aqueous solution and a 2% potassium-pyrosulfite aqueous solution) ] After carrying out dissolution mixing by using purified water and glycerol (moisturizer) as a solvent, said polymerization initiator could be added, it agitated and the compound for base layer gel formation was obtained. Subsequently, the 0.4-mm-thick spacer was installed on the

polyethylene terephthalate sheet (50 micrometers in thickness) in which silicone resin (release agent) was applied to the surface, and said compound for base layer gel formation was slushed into the range surrounded by the spacer concerned. By covering the surface of the compound concerned with the polyethylene terephthalate sheet (100 micrometers in thickness) in which it was applied to silicone resin (release agent) by the surface, and polymerizing by heating for 5 minutes at 70 \*\*, gelling was terminated and the base layer gel was formed.

[0072]A 100-micrometer-thick polyethylene terephthalate sheet is removed from the base layer gel obtained in this way, The 0.7-mm-thick spacer was installed in the circumference, and the compound for adhesive layer gel formation shown in Table 2 by the same method as formation of the above-mentioned base layer gel was slushed into the range surrounded by the spacer concerned. By polymerizing by covering with the polyethylene terephthalate sheet (38 micrometers in thickness) in which silicone resin (release agent) was applied to the surface, and irradiating with the ultraviolet radiation of hardness 50 mW/cm<sup>2</sup> for 60 seconds, gelling was terminated and the adhesive layer gel was formed.

[0073]The obtained gel sheet was pierced in the same shape as Embodiment 1, and the target final product was obtained.

With the manufacturing method of the embodiment 3 following, the pressure sensitive adhesive sheet for living bodies of the bilayer gel structure which consists of an adhesive layer and a base layer was produced. The presentation of an adhesive layer gel and the compound for base layer gel formation is shown in Table 3.

[0074]

[Table 3]

## ※ 実施例 3

成 分	重量%
〔粘着層ゲル形成用配合物〕	
親水性合成高分子	
ポリアクリル酸 *1	2.0
ポリアクリル酸ソーダ *2	6.0
架橋性因子	
メタケイ酸アルミン酸マグネシウム	0.4
保湿剤	
ヘキシレングリコール	10.0
ジプロピレングリコール	5.0
防腐剤	
デヒドロ酢酸ソーダ	0.3
薬効成分	
ビタミンE	0.5
エチルアルコール (溶媒)	5.0
ポリオキシエチレン硬化ヒマシ油 (界面活性剤)	0.5
精製水	残量
合 計	100.0
〔支持体層ゲル形成用配合物〕	
重合性不飽和単量体	
アクリルアミド	23.0
架橋性不飽和単量体	
N,N'-メチレンビスアクリルアミド	0.25
重合開始剤	
「イルガキュア 184」 *3	0.3
保湿剤	
グリセリン	20.0
防腐剤	
デヒドロ酢酸ソーダ	0.3
精製水	残量
合 計	100.0

\*1: 分子量 (Mw) 約 500 万

\*2: 分子量 (Mw) 約 30 万

\*3: 商品名 チバガイギー社製

[0075] After carrying out dissolution mixing of the component except a polymerization initiator (the Ciba-Geigy make, trade name "IRGACURE 184") by using purified water and glycerol (moisturizer) as a solvent among the compounds for base layer gel formation shown in Table 3, said polymerization initiator could be added, it agitated and the compound for base layer gel formation was obtained. After [ subsequently, ] slushing said compound for base layer gel formation into the range which installed the 0.5-mm-thick spacer on the polypropylene sheet (100 micrometers in thickness) in which silicone resin (release agent) was applied to the surface, and was surrounded by the spacer concerned, The textile fabrics of the 15-denier tulle made of nylon were made immersed into said compound. The surface of the compound for base layer gel formation containing said textile fabrics was covered with the

polyethylene terephthalate sheet (38 micrometers in thickness) in which it was applied to silicone resin (release agent) by the surface, it polymerized by having irradiated with the ultraviolet radiation of hardness [ of 50mW/cm ] <sup>2</sup> for 60 seconds, and gelling was terminated.

[0076]next, said bridge formation sex factor after mixing the component except a bridge formation sex factor (magnesium aluminometasilicate) among the compounds for adhesive layer gel formation shown in Table 3, kneading for about 30 minutes at 50 °C and making it uniform -- in addition, at 60 °C, it kneaded for about 10 minutes and was made uniform. the compound for adhesive layer gel formation obtained in this way was slushed into the container made from polypropylene (a depth of 1 mm) fabricated in size somewhat (about 2 mm) smaller than the shape shown in drawing 1, and using the doctor blade, it was uniformly filled up so that a crevice might not be generated in a container.

[0077]The base layer gel which gelling ended immediately after restoration of the above-mentioned compound for adhesive layer gel formation on the container in which it filled up with the compound concerned was piled up. Under the present circumstances, after placing upside down the field where peel-off and a base layer gel have exposed the polypropylene sheet (100 micrometers in thickness) used as an underlay at the time of manufacture of a base layer gel and piling it up, the base layer gel and the compound for adhesive layer gel formation were stuck by pressure.

[0078]The container in which it filled up with the compound for adhesive layer gel formation and a base layer gel, The polyethylene terephthalate sheet (38 micrometers in thickness) adhering to the base layer gel concerned was pierced according to respectively somewhat larger shape (the same shape as Embodiment 1 shown in drawing 1) than the shape of said container. Then, gelling of the compound for adhesive layer gel formation in a container was terminated over about 2 hours at the room temperature, and the target final product was obtained.

[0079]With the manufacturing method of the embodiment 4 following, the pressure sensitive adhesive sheet for living bodies of the bilayer gel structure which consists of an adhesive layer and a base layer was produced. The presentation of an adhesive layer gel and the compound for base layer gel formation is shown in Table 4.

[0080]

[Table 4]

## ※ 実施例 4

成 分	重量%
〔粘着層ゲル形成用配合物〕	
重合性不飽和単量体	
アクリルアミド	20.0
架橋性不飽和単量体	
N,N'-メチレンビスアクリルアミド	0.01
重合開始剤	
「イルガキュア 184」*3	0.3
保湿剤	
グリセリン	30.0
防腐剤	
デヒドロ酢酸ソーダ	0.3
薬効成分	
グリチルリジン酸ジカリウム	0.2
精製水	残量
合 計	100.0
〔支持体層ゲル形成用配合物〕	
重合性不飽和単量体	
アクリルアミド	25.0
架橋性不飽和単量体	
N,N'-メチレンビスアクリルアミド	0.3
重合開始剤	
4%過硫酸アンモニウム水溶液	5.0
2%ピロ亜硫酸カリウム水溶液	5.0
保湿剤	
グリセリン	20.0
防腐剤	
デヒドロ酢酸ソーダ	0.3
薬効成分	
グリチルリジン酸ジカリウム	0.2
精製水	残量
合 計	100.0

\*3: 商品名 チバガイギー社製

[0081]The compound for base layer gel formation shown in Table 4 was used, and also the base layer gel was produced by the same method as Embodiment 2. Next, the 100-micrometer-thick polyethylene terephthalate sheet was removed from the obtained base layer gel, the 0.7-mm-thick spacer was installed in the circumference, the compound for adhesive layer gel formation further shown in Table 4 was slushed, and also the adhesive layer gel was formed by the same method as Embodiment 2.

[0082]The gel sheet obtained in this way was pierced in the same shape as Embodiment 1, and the target final product was obtained.

With the manufacturing method of the comparative example 1 following, the pressure sensitive adhesive sheet for living bodies of the bilayer gel structure which consists of an adhesive layer and a base layer was produced. The presentation of an adhesive layer gel and the compound for base layer gel formation is shown in Table 5. The compound for adhesive layer gel formation is the same as what was used in

## Embodiment 1.

[0083]

[Table 5]

## ※ 比較例 1

成 分	重量%
〔粘着層ゲル形成用配合物〕	
親水性合成高分子	
ポリアクリル酸 *1	2.0
ポリアクリル酸ソーダ *2	6.0
架橋性因子	
合成ケイ酸アルミニウム	1.3
保湿剤	
1,3-ブチレングリコール	10.0
防腐剤	
デヒドロ酢酸ソーダ	0.3
薬効成分	
ビタミンC	3.0
精製水	残量
合 計	100.0
〔支持体層ゲル形成用配合物〕	
天然高分子	
局方ゼラチン	30.0
架橋性因子	
硫酸カリウムアルミニウム	3.0
保湿剤	
プロピレングリコール	30.0
防腐剤	
デヒドロ酢酸ソーダ	0.3
精製水	残量
合 計	100.0

\*1: 分子量 (Mw) 約 500 万

\*2: 分子量 (Mw) 約 30 万

[0084]The compound for adhesive layer gel formation shown in Table 5 was used, and also the adhesive layer gel was formed with the same manufacturing method as Embodiment 1. After having mixed the component except a bridge formation sex factor (aluminium potassium sulfate) among the compounds for base layer gel formation shown in Table 5, warming at 30 \*\* and dissolving gelatin, said bridge formation sex factor was added and it kneaded for 5 minutes. The doctor blade was used and it spread in thickness of 0.5 mm, and by allowing to stand at a room temperature for about 2 hours, the surface of the above-mentioned adhesive layer gel on which gelling ended the compound for base layer gel formation obtained in this way was made to complete gelling, and the base layer gel was formed in it.

[0085]The 50-micrometer-thick polypropylene sheet was carried on this base layer gel, it pierced in the same shape as Embodiment 1, and the target final product was obtained.

After spreading uniformly the compound for adhesive layer gel formation of the same presentation as what was used in comparative example 2 Embodiment 1 in thickness of 0.8 mm by the same method as

Embodiment 1, Immediately, the nonwoven fabric made from polypropylene of metsuke amount [ of 100g/m ] <sup>2</sup> as a base material was made to stick to the surface by pressure, and gelling was terminated by allowing to stand at a room temperature for about 2 hours.

[0086]Subsequently, this was pierced in the same shape as Embodiment 1, and the pressure sensitive adhesive sheet for living bodies which is a final product was obtained.

After spreading uniformly the compound for adhesive layer gel formation of the same presentation as what was used in comparative example 3 Embodiment 1 in thickness of 0.8 mm by the same method as Embodiment 1, Gelling was terminated by making the ethylene-vinylacetate copolymer sheet (100 micrometers in thickness) as a base material stick to the surface by pressure, and allowing to stand at a room temperature immediately, for about 2 hours.

[0087]Subsequently, this was pierced in the same shape as Embodiment 1, and the pressure sensitive adhesive sheet for living bodies which is a final product was obtained.

After spreading uniformly the compound for adhesive layer gel formation of the same presentation as what was used in comparative example 4 Embodiment 1 in thickness of 0.8 mm by the same method as Embodiment 1, gelling was terminated by allowing to stand at a room temperature for about 2 hours. The upper surface of the adhesive layer gel obtained in this way was covered with the polyethylene terephthalate sheet (100 micrometers in thickness) which applied silicone resin (release agent) to the surface, and was pierced in the same shape as Embodiment 1.

[0088]Subsequently, the plastic film which covers both sides of the above-mentioned adhesive layer was removed, and the pressure sensitive adhesive sheet for living bodies of the lamina gel structure was obtained.

[System performance testing] About the pressure sensitive adhesive sheet obtained by the above-mentioned embodiment and the comparative example, the various examinations for evaluating the performance were done.

[0089](Adhesive evaluation) They are JIS Z 0237-1991 "adhesive tape and a pressure sensitive adhesive sheet test method about the tackiness of an adhesive layer gel [ in / first / each pressure sensitive adhesive sheet ], and a base layer gel. In accordance with the method of a description, it measured to 12. inclination type ball tackiness." The angle of inclination at the time of measurement was set as 20 degrees. however, the ball specified to JISB1501-1988 as mentioned above about the ball to be used -- calling (the 2nd column) -- the gel sheet of high tackiness was also made to correspond by using a larger thing than 1 A measurement result is shown in Table 6.

[0090]

[Table 6]

試験対象層		ボール ナンバー
実施例 1	粘着層	23
	支持体層	2
実施例 2	粘着層	10
	支持体層	2
実施例 3	粘着層	30
	支持体層	2
実施例 4	粘着層	42
	支持体層	2
比較例 1	粘着層	23
	支持体層	2
比較例 2	粘着層	23
	支持体 (不織布)	—*
比較例 3	粘着層	23
	支持体 (シート <sup>†</sup> )	—*
比較例 4	粘着層	23

\*: No.2 のボールが止まらなかった。

<sup>†</sup>: エチレン-酢酸ビニル共重合体シート

[0091](Sensory characteristic evaluation)

(1) The pressure sensitive adhesive sheet obtained by the transparency above-mentioned embodiment and the comparative example was put on respectively white space, and the ten-point character (Mincho) printed in black ink on space was read. Transparency made O the case where the character on space has been deciphered, and evaluated as x the case where it was not able to read.

[0092](2) The operativity of the operativity pressure sensitive adhesive sheet was evaluated after it stuck on the face, as the surface of the adhesive layer contacted the skin. That is, when a pressure sensitive adhesive sheet was stuck on a face, it did not coil around the finger at all, but the case where coiled around 5 and a finger and the case of attachment where it is able to stick easily was not completed at all was set to 0, and it judged in six steps of 0 to 5. In the embodiment and the comparative example 1, after removing the plastic sheet stuck on the base layer at the time of use, it was stuck on the face.

[0093](3) The pressure sensitive adhesive sheet stuck like evaluation of the "operativity" of the flattery nature above (2) combined with the motion of a face, and set to 5 the case where followed completely, and it expanded and contracted, the case where the flattery through which it moves and passes was not seen at all was set to 0, and it judged in six steps of 0 to 5.

(4) The case where the pressure sensitive adhesive sheet stuck like evaluation of the "operativity" of the fitting feeling above (2) stuck over the aspect of affairs of a face was set to 5, the wrinkle was made in each part of the pressure sensitive adhesive sheet, the case where it was generated by many floats was set to 0, and it judged in six steps of 0 to 5.

[0094](5) When removing from a face the pressure sensitive adhesive sheet stuck like evaluation of the "operativity" of the feel above at the time of ablation (2), the case where displeasure was not felt was set to 5, the case where a pain and displeasure were sensed was set to 0, and it judged in six steps of 0 to 5.

(6) Cool feeling was sensed at the time of attachment of a cool feeling pressure sensitive adhesive sheet, the case where cool feeling fully continued also during attachment (for about 20 minutes) was set to 5,



the case where cool feeling was not felt at the time of attachment was set to 0, and it judged in six steps of 0 to 5.

[0095](7) When using interlaminar-peeling each pressure sensitive adhesive sheet, and when exfoliating from an after-use face, the case where ablation did not take place between the laminated layers was made into O, and the case where ablation took place was made into x. The result of the above-mentioned evaluation took the average of evaluation by ten special panelists. The above (2) In evaluation of - (6), when the evaluation result (average) was four or more, evaluation presupposed that it is good about the item.

[0096]Each evaluation criteria are shown in Table 7.

[0097]

[Table 7]

	実施例				比較例			
	1	2	3	4	1	2	3	4
透 明 性	○	○	○	○	○	×	○	○
操 作 性	4.5	4.7	4.8	4.2	4.8	5.0	5.0	0.4
追 従 性	4.5	4.8	4.5	4.7	4.6	2.5	0.7	4.5
密 着 感	4.6	4.5	4.8	4.9	4.5	1.8	0.8	4.6
剥離時の感触	4.6	4.8	4.2	2.8	4.5	4.7	4.2	4.4
冷 涼 感	4.8	4.5	4.6	4.1	4.5	3.4	1.8	4.9
層間剥離	○	○	○	○	○	○	×	—

[0098]In the comparative example 2 and the comparative example 3 pressure sensitive adhesive sheet, since not a gel but an existing plastic sheet and nonwoven fabric were used as a base material, the result of Table 7 showed having interlaminar peeling and an opaque or serious fault in respect of flattery nature etc. to a motion of the skin. In the pressure sensitive adhesive sheet of the lamina gel structure acquired by the comparative example 4, it turned out that it has a serious fault for operativity. Especially the pressure sensitive adhesive sheet of Embodiment 4 had slightly low evaluation about the feel at the time of the fitting feeling to skin removing from a face to a sake too highly [ the tackiness of the adhesive layer of the very good thing ]. However, the problem was a grade not becoming when applying the adhesive grade in Embodiment 4 to the skins other than a face.

[0099](Heat instability test) It put in the aluminum bag in the status that it equipped with the plastic sheet which covers an adhesive layer and a base layer for the pressure sensitive adhesive sheet obtained by the embodiment and the comparative example 1, the seal was performed, and it saved at 60 \*\* for one month. The pressure sensitive adhesive sheet was picked out from the aluminum bag after one-month progress, and visual inspection of whether whether the shape shown in drawing 1 being held and liquid sagging have occurred was conducted.

[0100]An inspection result is shown in Table 8. The case where the shape of the pressure sensitive adhesive sheet was held was made into O, and the case where it was not held was made into x.

[0101]

[Table 8]

	実施例 1	実施例 2	実施例 3	実施例 4	比較例 1
外観検査	○	○	○	○	×

[0102]In the pressure sensitive adhesive sheet for bilayer gel-structure living bodies of the comparative

example 1, since gelatin gel was used for the base layer, the result of Table 8 showed that there was no thermal stability.

(Rot proofing test) Where the plastic sheet which covers an adhesive layer and a base layer for the pressure sensitive adhesive sheet obtained by the embodiment and the comparative example 1 is removed, after exposing said both layers to outdoor one for one week, it was neglected in the laboratory dish for two weeks at the temperature of 38 \*\*, and 40 to 80% of humidity. It was inspected after neglect whether putrefaction would have arisen in the adhesive layer or the base layer.

[0103]A test result is shown in Table 9. The case where putrefaction did not arise was made into O and the case where putrefaction arose was made into x.

[0104]

[Table 9]

	実施例 1	実施例 2	実施例 3	実施例 4	比較例 1
腐敗試験	○	○	○	○	×

[0105]In the pressure sensitive adhesive sheet for bilayer gel-structure living bodies of the comparative example 1, since gelatin gel was used for the base layer, the result of Table 9 showed that putrefaction took place, in spite of having added antiseptics.

[0106]

[Effect of the Invention]Since each layer has adopted the multilayer gel structure which consists of a gel object of synthetic macromolecule according to this invention as explained in full detail above, The pressure sensitive adhesive sheet for multilayer gel-structure living bodies which whose whole pressure sensitive adhesive sheet is transparent, was excellent in operativity, or a fitting feeling or the flattery nature to a motion of the skin, and was further excellent in preservation durability can be obtained.

[0107]This pressure sensitive adhesive sheet for living bodies is suitably used in fields, such as drugs, quasi drugs, cosmetics, hygienic goods, and general merchandise.

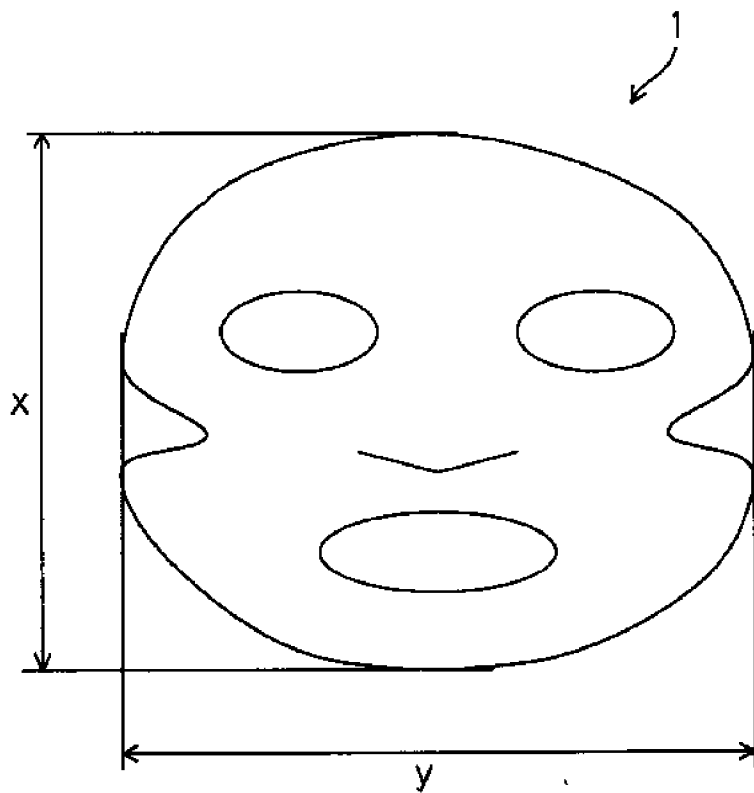
[Brief Description of the Drawings]

[Drawing 1]It is a front view showing one embodiment of the pressure sensitive adhesive sheet for multilayer gel-structure living bodies concerning this invention.

[Explanations of letters or numerals]

1 Pressure sensitive adhesive sheet for multilayer gel-structure living bodies

[Drawing 1]



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[Translation done.]